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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,530	11/03/2005	Jun Ido	2257-0255PUS1	9638

2292 7590 10/02/2008  
BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER
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TIMORY, KABIR A

ART UNIT	PAPER NUMBER
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2611

NOTIFICATION DATE	DELIVERY MODE
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10/02/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/555,530	<b>Applicant(s)</b> IDO, JUN	
	<b>Examiner</b> KABIR A. TIMORY	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 20-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 20-38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/3/2005 &amp; 8/2020/07</u> .                               | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Objections*

1. Claims 20-38 are objected to because of the following informalities:
  - (1) In claim 20, line 15: Insert **--estimation--** between **“profile”** and **“;”**.
  - (2) In claim 21, line 18: Insert **--estimation--** between **“profile”** and **“;”**.
  - (3) In claim 21, line 33: Insert **--a period--** at the end of the line.
  - (4) In claim 26, line 17: Insert **--estimation--** between **“profile”** and **“;”**.
  - (5) In claim 36, line 15: Insert **--estimation--** between **“profile”** and **“;”**.
  - (6) In claim 37, line 18: Insert **--estimation--** between **“profile”** and **“;”**.
  - (7) In claim 38, line 17: Insert **--estimation--** between **“profile”** and **“;”**.

**Appropriate correction is required.**

### *Allowable Subject Matter*

2. Claims 1-7 would be allowable if rewritten including all of the limitations and overcome the claims objections.
3. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record, Singh et al. (US 20060291578) does not teach or suggest a delay profile estimation unit for estimating a delay profile based on said transmission channel characteristic of said pilot signal output from said first divider unit, and

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outputting a signal corresponding to an average value of a maximum delay time that is an arrival time of a most delayed incoming wave and a minimum delay time that is a front most incoming wave in said delay profile; an interpolation filter unit for performing interpolation on said transmission channel characteristic of said pilot signal calculated in said first divider unit along a time axis and along frequency axis, and outputting a transmission channel characteristic corresponding to said subcarrier component; a timing synchronization unit for outputting a timing signal that controls timing for performing said Fourier transform in said Fourier transform unit based on said signal corresponding to said average value output from said delay profile estimation unit

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(1) Tsujishita et al. (US 5946292) disclose a method and digital receiver for receiving orthogonal frequency-division multiplexed signals.

(2) Svensson et al. (US 20060239178) disclose a reduced complexity channel estimation in OFDM systems.

(3) Rickard et al. (US 7020074) disclose a synchronization method and apparatus for frequency division multiplexed telecommunication systems.

(4) Crawford et al. (US 20030063678) disclose a OFDM pilot tone tracking to reduce performance loss due to frequency pulling and pushing.

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(5) Seo et al. (US 7215636) disclose a Method of determining training signal in OFDM, and apparatus and method for receiving OFDM signal using the training signal.

5. This application is in condition for allowance except for the following formal matters: claims objections.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 25 USPQ 74, 453 O.G. 213, (Comm'r Pat. 1935).

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kabir A. Timory whose telephone number is 571-270-1674. The examiner can normally be reached on 6:30 AM - 3:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kabir A Timory/

Examiner, Art Unit 2611

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611